UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLUMBIA

UNITED STATES OF AMERICA, Plaintiff, v. PHILIP MORRIS USA INC., f/k/a PHILIP MORRIS INC., *et al.*, Defendants.	Civil Action No. 99-CV-2496 (GK) Next Scheduled Court Appearance: Trial (ongoing)

NOTICE OF FILING THE WRITTEN
DIRECT EXAMINATION OF DENNIS DIETZ

Pursuant to Order No. 471A, Defendant Liggett Group Inc. herewith files the corrected the Written Direct Examination of Dennis Dietz.

Dated: New York, New York
March 14, 2005

Respectfully submitted,

By: */s/ Peter A. Woolson*

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WRITTEN EXAMINATION OF
DENNIS DIETZ
SUBMITTED PURSUANT TO ORDER #471A

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I. INTRODUCTION

Q. Would you please state your full name for the record?

A. Dr. Dennis Dietz.

Q. Dr. Dietz, what is your current position?

I am a Study Director and Senior Toxicologist at Battelle Toxicology Northwest, which is located in Richland, Washington.

Q. What is a toxicologist?

A. In general, toxicology is a broad field of study of the adverse effects of chemicals on organisms, including on human beings. A toxicologist is a scientist who engages in that field of study.

Q. Do you have particular areas of expertise within toxicology?

A. My career has gone through different phases, but I started out with greater specialization in neuro-toxicology and behavioral toxicology. I later gravitated toward studying carcinogenicity and mutagenicity.

Q. Would you please describe your educational background, beginning with your studies after high school?

A. I attended and earned degrees from three universities: the University of Cincinnati, Michigan State University and the University of Michigan. From the University of Cincinnati, I received a B.A. degree in Chemistry in 1964. After that, I earned a Master of Arts degree from Michigan State in 1969, in education and zoology. Then, I earned a Ph.D. in toxicology in 1976 from the University of Michigan.

Q. Do you hold any additional certifications or diplomas within your area of expertise?

A. Yes, I obtained a Diplomate from the American Board of Toxicology in 1982.

Q. Have you published any articles within your areas of expertise?

A. Yes, I have been the author or co-author of several publications in respected scientific journals. Most of those articles were subject to peer review.

Q. What did you do professionally following your graduation from the University of Michigan in 1976?

A. I entered a post-doctoral position for about two to three years at the University of North Carolina, where I conducted behavioral pharmacology and behavioral toxicology research.

Q. Can you briefly describe your employment following your post-doctoral work at the University of North Carolina?

A. Following my work at the University of North Carolina, I went to Madison, Wisconsin to work at a laboratory known as Raltech. At Raltech, I was the Study Director for certain cancer bioassays and other short term toxicology studies.

Q. What kind of business was Raltech in?

A. Well, Raltech was a contract laboratory, doing laboratory and toxicology research on a contract basis for outside clients. Raltech did various toxicology-type studies, whether it be chronic, subchronic, acute, or genetic toxicology testing. It has gone through several changes over the years, but, at the time, Raltech was engaged in doing primarily rodent studies and other research for a variety of clients, including for private and industrial clients and for government, like the U.S. Army and the National Cancer Institute.

Q. How long were you at Raltech?

A. Approximately two and a half to three years, until approximately October 1981.

Q. Okay. What was your next position?

A. Tracor Jitco, Inc. in Research Triangle Park, North Carolina.

Q. And what was the work that you were doing there?

A. We were doing contract research and toxicology work for the National Toxicology Program. I was Operations Coordinator for their cancer bioassays.

Q. Was the work that you did at Tracor Jitco similar to what you were doing at Raltech?

A. Well, not really. At Raltech, I was a hands-on Study Director, going into the lab rooms, observing animals, and I had people that reported their day-to-day activities in the laboratory to me. When I was with Tracor Jitco, we had certain professionals on staff, pathologists, toxicologists and the like, who were managing contracts and testing that was performed at other laboratories. So we would receive reports and information from those other labs and then review them on behalf of the National Toxicology Program. It was more of a programmatic kind of approach, as opposed to hands-on.

Q. How long did you work at Tracor Jitco?

A. For about a year and a half or so, until around 1983.

Q. Okay. What was your position of employment after Tracor Jitco?

A. I went to work for the Research Triangle Institute (or RTI) in North Carolina.

Q. What kind of work were you doing there?

A. I was a Staff Toxicologist primarily writing proposals to get contracts with the National Cancer Institute (NCI).

Q. Was the work that you did at RTI similar to what you were doing at Tracor Jitco?

A. No, RTI was more chemo-preventative in approach. Chemo-preventative refers to natural constituents, such as Vitamin A or Selenium, which can be used to circumvent cancer in animal models. I was trying to get RTI into a position where they could do those studies, so I was writing a variety of proposals to NCI to obtain contracts to do chemo-preventive research. I also did research work, known as Unscheduled DNA Synthesis (or UDS). UDS is more of a

DNA repair-type assay using hepatocytes from rats. So I was doing a variety of things, but I think my primary reason for being there was to try to get RTI on board for these chemo-preventative studies.

Q. How long were you employed at RTI?

A. Three years almost to the day, until about 1986.

Q. And what position of employment did you take after separating from RTI?

A. I was offered a position to go to the National Toxicology Program, which was a government position.

Q. When you say it was a government position, what do you mean?

A. Well, the National Toxicology Program was an inter-agency program run by the federal government, and it involved various federal agencies, such as FDA, NCI, NIOSH and NIEHS. I was employed by NIEHS, which is the National Institute of Environmental Health Sciences.

Q. Okay. How long were you employed with the National Toxicology Program?

A. Approximately four years, until about August 1990.

Q. And what type of work did you do at the National Toxicology Program?

A. It was very similar to the work that I did at Tracor Jitco on behalf of the NCI, because the National Toxicology Program had taken over that work from Tracor Jitco. The people there wanted me to come back and work with them. So I accepted that position.

Q. Where did you go from the National Toxicology Program?

A. In 1990, I went to work as a toxicologist for Liggett Group Inc.

Q. We will talk about the work that you did at Liggett in a moment. Before turning to that, can you tell us whether any of the work or research that you just described, prior to working for Liggett, involved smoking and health issues?

A. No, it did not.

Q. Prior to your work at Liggett, did any of the work or research that you performed involve cigarette smoke or tobacco research?

A. No, it did not.

Q. Prior to your work at Liggett, was any of your work or research done for or on the behalf of any tobacco company?

A. No, it was not.

Q. Dr. Dietz, have you ever testified at a trial before?

A. No, I have not. I have been deposed twice in this action, and several times in other smoking and health litigations, but I have never testified at trial.

Q. And, Dr. Dietz, are you being paid in connection with your time or work in connection with this case?

A. I no longer work for Liggett. I work full time for Battelle. I am being paid an hourly rate in connection with my time spent preparing for and testifying in this action. I am also being reimbursed for my travel expenses.

II. DR. DIETZ'S WORK FOR LIGGETT FROM 1990-1999

Q. Turning to your work at Liggett, what was your position when you began working for Liggett in 1990?

A. I was hired as the Manager of Scientific Issues. It was a position within Liggett's Research Department.

Q. How long did you maintain that position?

A. I remained the Manager of Scientific Issues until approximately October 1999, when I left Liggett to take my current position at Battelle.

Q. What were your duties as Manager of Scientific Issues?

A. I had three core responsibilities: product integrity; product development; and to represent the company on toxicology issues at certain industry-wide conferences and meetings.

Q. Can you describe more specifically what you mean by product integrity?

A. Yes. My job was to make sure that the various components used in the manufacture of Liggett's cigarettes, such as the ingredients, the papers, the filters, the glue, etc., conformed with good manufacturing standards. I also had to make sure that the manufacturing process also conformed to good manufacturing standards.

Q. What do you mean by "good manufacturing standards?"

A. Well, cigarettes are composed of various discrete components: different blends of tobacco; different flavoring ingredients; different types of papers and so on. My job was to learn as much as I could about the various components that make up the cigarette and determine if there was anything identified in the literature, or by other manufacturers, that would raise questions about whether it should be included in the cigarette.

Q. Can you give us an example?

A. Yes. Let's say there is a particular ingredient that is added to a brand of cigarettes to give it a certain flavor. My job would be to research that ingredient and determine whether there was any reason from a toxicological perspective that such an ingredient should not be added.

Q. How would you go about researching it?

A. I would have access to all publicly available literature on different ingredients, additives and chemicals; I would review watch lists and other information disseminated from public health authorities and governmental agencies; I would review journal articles, newsletters and other publications addressing ingredient-related issues; I would have access to and review Liggett's research library and archived materials; I would review information from different ingredient and component manufacturers; I would attend conferences and seminars related to ingredient and

additive issues; and I would confer with toxicologists and other professional colleagues who worked on such issues.

Q. Would you conduct your own laboratory or empirical research on ingredients or additives at Liggett?

A. No. My work in this regard was to collect information available from other sources.

Q. Why is that?

A. Well there are hundreds, if not thousands, of different ingredients and components that comprise the various cigarettes that are manufactured and sold. All of these components were purchased from outside vendors. Liggett was a small company by 1990 and did not have the resources to do empirical research on all of the components of its products. It would have been an enormous undertaking for Liggett to conduct original laboratory research for the components in its products. Nor was it necessary because there was much information generally available from outside sources about the various ingredients and components that were being used in the cigarettes. So instead, Liggett relied on the gathering of information from outside sources concerning the components of its cigarette products.

Q. Did your job include an assessment of whether cigarette smoke itself was dangerous?

A. No, not directly. It was my job to assess whether the individual components posed risk or were dangerous, not the cigarette smoke.

Q. Why is that?

A. Well, I was involved primarily in the assessment of the components that go into the cigarette, not an evaluation of the smoke chemistry or the constituents of smoke that come out of a cigarette. These are two very different areas of specialization and research. My job was the former, to assess the ingredients and components before they are added to the cigarette. The

subject matter of smoke chemistry is extremely complex, and there is a vast body of literature and research on this subject. There was also a good deal of research that was done by Liggett and others concerning smoke chemistry before I ever started working there.

Q. Was anyone at Liggett involved in the evaluation of the smoke chemistry, or the constituents of smoke that were formed by a burning cigarette?

A. Yes. There were analytical chemists at Liggett before and at the same time that I was there who did research into the constituents of cigarette smoke. My job was in part to coordinate with them, but the second part of the analysis, the smoke chemistry, was largely their area of expertise.

Q. Can you identify some of the other scientists who worked at Liggett in that capacity at that time?

A. Yes, Dr. John Woods and Cliff Detweiler were among the scientists who worked in Liggett's Research Department while I was there. Roy Hilliard, Herb Wallick and Bob Kersey were also scientists who worked in the Liggett Research Department when I joined the company in 1990.

Q. You mentioned "product development" as one of your core responsibilities. What were your duties in connection with product development?

A. From time to time, Liggett would change the ingredients or components of its cigarettes to modify an existing brand or to come up with an entirely new brand. My job would be to assess the ingredients and components of those new products. I would apply the same research techniques that I previously described to the components of these new product developments.

Q. During the time that you worked at Liggett, was it involved in the research and development of any reduced risk or less hazardous cigarette projects?

A. For the most part, no.

Q. Why is that?

A. My understanding is that, prior to my employment at Liggett, there had been efforts to research and develop reduced risk cigarette products. However, by the time that I came to work at Liggett in 1990, Liggett no longer had the financial or human resources to commit to the research and development of reduced risk cigarette products. By the time that I became employed, Liggett was in the business of developing, manufacturing and selling only conventional cigarettes.

Q. So you were not involved in any efforts by Liggett to research and develop reduced risk or less hazardous cigarettes?

A. No, my work was limited to product development and support for the full range of conventional cigarette products.

Q. Do you know whether the company began to do research and development into potentially reduced risk products after you left in 1999?

A. Yes, I am generally aware that Liggett's affiliate, Vector Tobacco, began to do research and development into reduced risk products after I left in 1999. For example, I know that Dr. John Woods left Liggett to work on reduced risk cigarette product development for Vector Tobacco in around 1999-2000.

Q. You said that the third of your core responsibilities was to represent the company on toxicology issues at certain industry-wide conferences and meetings. What was involved in that?

A. In an effort to obtain and share information with other manufacturers about product ingredients and components, I would meet with representatives and scientists from other tobacco companies on a fairly regular basis. I believe this was referred to as the Ingredients Review Panel. These meetings allowed the scientists from different companies to pool their resources

and share information about different ingredients and components. If one company had negative information concerning a particular ingredient, this was an efficient way to share that information within the industry. It was an essential part of good manufacturing standards.

Q. Did you attend any conferences or meetings beyond the subject matter of ingredients?

A. Yes. I also attended conferences and meetings on behalf of Liggett regarding other issues, such as cigarette ignition propensity. That is, the propensity of a cigarette to ignite other things and to cause fires. There was an interest in finding a way to decrease ignition propensity, and I was involved in that to some degree. I believe the name of the group was the Ignition Propensity Working Group. Also, from time to time, I would represent Liggett at other scientific conferences on issues that Liggett might have some interest in. For example, I attended, on behalf of Liggett, the North Carolina State University conferences regarding pesticide residues, which focused on issues of pesticide residue on tobacco leaf. Those were probably the only interactions I had with other tobacco companies directly.

Q. What other tobacco companies were represented at these conferences and meetings?

A. Well, the ingredients and ignition propensity meetings that I attended were all attended by the other major domestic tobacco manufacturers: Philip Morris, R.J. Reynolds, Brown & Williamson, and Lorillard. Other conferences that I attended would from time to time have a broader participant base.

Q. You said that scientists who participated in those meetings would pool their resources. What did you mean by that?

A. Well, the scientists would divide certain ingredient research projects among the different participants. This would eliminate duplication and allow for the maximum amount of shared research. So it would not be uncommon for a particular ingredient to be assigned to a

participating scientist; that scientist would then do the research and report back to a committee or sub-committee within the larger group with the results.

Q. Would you be involved in doing that type of work?

A. Yes, I would have particular ingredient research assignments as well, and I would report back to the group with my results.

Q. How would you report back to the group?

A. We would usually prepare a writing, known as a White Paper, regarding our results. From time to time, I would draft White Papers on particular ingredients and report back to the group in that manner.

Q. I would like to show you a document that was marked at your July 1, 2002 deposition in this action as Dietz Exhibit 10. This document makes reference to certain White Papers that you drafted concerning Raisin and Fig Juice Concentrate. Are those examples of some of the White Papers drafted by you in connection with your work on the Ingredients Review Panel?

A. Yes.

Q. Are these White Papers typical of the type of work performed by the Ingredients Review Panel?

A. Yes.

Q. In your view, did the Ingredients Review Board, the Ignition Propensity Working Group and other industry-wide meetings and groups that you attended on behalf of Liggett, have legitimate scientific purposes?

A. Absolutely, yes.

Q. Did the Ingredients Review Panel have other responsibilities beyond sharing information concerning ingredients and components?

A. Yes. Certain government regulatory bodies, like the Centers for Disease Control (the CDC) and Health and Human Services, required that the tobacco companies regularly disclose the ingredients used in their cigarette products. At least one function served by an industry–wide ingredients group was to comply with these types of regulatory requirements. The scientists involved, including myself, would be responsible for compiling a master list of all of the ingredients that were used in the cigarettes that were commercially sold for purposes of regulatory disclosures.

Q. Why was it necessary for ingredient disclosure to be done on a coordinated basis?

A. Well, each tobacco manufacturer was highly concerned about the confidential and proprietary nature of the formulae for its cigarette products. This was very valuable information belonging to each individual company. So the thinking was that the best way to comply with the disclosure requirements, and to protect the proprietary formulae, was to create a master list of all of the ingredients found within the cigarette products on an industry-wide basis. That way, all of the ingredients would be disclosed, but there would be no way to construct or reverse engineer the proprietary formula of any particular cigarette brand or company.

Q. Was Liggett concerned about other tobacco companies obtaining access to its proprietary cigarette formulae?

A. Yes, Liggett, like all the other companies, did not want anyone, in particular the other tobacco companies or the government, to have access to its proprietary formulae, or to information from which it might be possible to reverse engineer those formulae. So Liggett was highly protective of that information.

Q. What do you mean by reverse engineer?

A. That means that someone, like a competitor, can try to recreate the formula for a particular cigarette brand by evaluating information that is available, such as the ingredients identified by the company and an analysis of the cigarette itself.

Q. What steps were taken to protect this confidential information?

A. As I mentioned, the disclosures were made in the form of a master list. Additionally, lawyers were involved in the process of compiling information from the various tobacco company scientists, creating the master list and complying with the regulatory requirements.

Q. Which lawyers would be involved in this process?

A. Well, Liggett had its own lawyers who would be scrupulous in protecting Liggett's proprietary information. With respect to the industry-wide ingredients committee and the creation of the master list for regulatory compliance purposes, there would be lawyers from the Covington & Burling firm who had expertise in this area of regulatory compliance. The Covington & Burling lawyers would coordinate the collection of ingredient information from each of the participating tobacco companies and create a master list for disclosure purposes.

Q. Did Liggett lawyers ever instruct you to withhold your research documents or other materials from productions in litigations?

A. No, they did not.

Q. Did the lawyers for Liggett advise you to be careful about protecting confidential information?

A. Yes. When I first joined Liggett, I met with outside lawyers representing Liggett who briefed me on the confidential and proprietary nature of the cigarette formulae and the ingredients research work that I would be doing. This was important for me because, prior to my work at Liggett, I worked essentially within a scientific community, and not in a business environment where there was a premium placed on proprietary formula information. I was

cautioned to maintain the information and documents that I was working on as confidential. I was also told that it was possible for documents that I created to become the subject of discovery in litigation. In that context, I was asked to identify or mark documents that potentially contained confidential information, so that in the event that there was document review and production at the company, lawyers working for the company would have some indication as to what I considered to be proprietary.

Q. Is this why you marked many of your documents as "Privileged and Confidential"?

A. Yes, to alert lawyers who may be reviewing them for production in particular litigations that sensitive information may be contained within the document.

Q. Were you attempting to hide those documents or assert any privilege over those documents by so marking them?

A. No. It was not my role at the company to make privilege determinations over documents for litigation purposes, or to determine whether documents should be produced or not in any given litigation. That was a job for the lawyers. My purpose was to alert those outside lawyers, who might be reviewing my documents as part of a litigation, that certain of my documents contained sensitive and proprietary information and that they should treat them accordingly.

Q. Did there come a time when you were no longer permitted to attend the Ingredients Review Panel and Ignition Propensity Working Group and other industry-wide meetings and groups on behalf of Liggett?

A. Yes.

Q. When was that?

A. Sometime in 1997.

Q. What were the circumstances surrounding your termination in the participation of industry-wide meetings?

A. There was a situation where settlements were made by Mr. LeBow. At the time of the settlements, there was basically a dialogue at these meetings concerning the fact that Liggett was no longer welcome, so we just adhered to that.

III. LIGGETT'S SMOKING AND HEALTH RESEARCH FROM 1953 - 1964

Q. Dr. Dietz, are you generally familiar with who currently staffs the Research Department at Liggett today?

A. I am generally aware, but I don't have all of the specifics.

Q. Are there any scientists currently in Liggett's Research Department who had been there before 1990 when you joined?

A. No, I do not believe that there are any scientists currently at Liggett who had been around before 1990.

Q. To your knowledge, are there any scientists around today who were with Liggett's Research Department back in the 1950s?

A. No, my understanding is that there are none.

Q. Dr. Dietz, after you joined Liggett in 1990, did you become familiar with the kind of work that the Liggett Research Department had done in the past?

A. Yes, I did.

Q. Did you have to do so as part of your job duties at Liggett?

A. Yes.

Q. Why was that?

A. Well, if you're in a research area, then the more you know about that area and what has been done in the past and what mistakes were made and what successes they had, the more likely it is that you'll be successful in choosing the right directions for the future.

Q. And how did you make yourself familiar with Liggett's past research and development efforts?

A. There were some people working at Liggett at the time when I joined who had been there since the 1950s.

Q. And who were they?

A. Roy Hilliard and Bob Kersey. I talked to them about research projects that had been pursued in the past. Additionally, Liggett kept an archive of documents, which included research reports, memos, research planning, research budgets, patents, etc. I had access to those documents as well, and read many of them while at Liggett.

Q. Did Liggett maintain formula books for the different brands of cigarettes that it has manufactured over time?

A. Yes.

Q. Were those accessible to you as well during your career at Liggett?

A. Yes, they were.

Q. And did you review those as well during your career at Liggett?

A. Yes, I did.

Q. And from those formula books, were you able to see how Liggett cigarettes or the composition of Liggett cigarettes changed over time?

A. Yes.

Q. During the course of your experience as a toxicologist, have you had an opportunity to review published studies from the past that reflected an association between cigarette smoking and disease?

A. Yes, I have reviewed studies of that type.

Q. Dr. Dietz, who is Dr. Ernst Wynder?

A. Dr. Wynder was a very famous scientist who was working on the smoking and health issue. He was one of the leading scientists and authors of many important studies on the smoking and health issues beginning in the early 1950s.

Q. Who was Dr. Evarts Graham?

A. Dr. Graham was a scientist also, and he collaborated with Dr. Wynder.

Q. Dr. Dietz, are you familiar with a study that Dr. Wynder and Dr. Graham published in 1953 regarding mouse skin painting and cigarette smoke?

A. Yes, I am.

Q. Dr. Dietz, I'd like to show you U.S. 63594. Is this a copy of the Wynder and Graham 1953 mouse skin painting study as it appeared in the publication, Cancer Research?

A. Yes it is.

Q. Can you explain a little bit about Dr. Wynder and Dr. Graham's 1953 mouse painting study?

A. Yes. This was a very significant study in the context of smoking and health research. Drs. Wynder and Graham achieved the first laboratory results that demonstrated that cigarette smoke condensate was biologically active on the skin of laboratory mice. What Wynder and Graham did was collect the particulate phase of cigarette smoke, which is also known as the tar. They dissolved the tar or suspended it in a solvent so that it became liquid. This condensate was then painted on the backs of certain susceptible laboratory mice. This process was repeated three times a week for about two years, the lifespan of the laboratory mouse that was used.

Q. And what were the results of that experiment?

A. They found that the mice developed significant numbers of tumors where the organic solvent and the tar had been painted.

Q. You said that this study was significant in the context of smoking and health research, why is that?

A. Well, prior to the 1953 Wynder and Graham mouse skin painting study, there had been no biological study that had demonstrated that cigarette smoke was biologically active in animals. There had been laboratory experiments which had attempted to come up with such a finding, but none had been successful in coming up with a significant, positive result. In fact, the 1953 Wynder and Graham study does a very good job of summarizing the prior biological experiments involving cigarette smoke in laboratory animals, all of which were unsuccessful. Additionally, prior to 1953, there had been some epidemiological studies in relatively small samples which tended to show a statistical association between cigarette smoking and lung cancer, particularly in male smokers. But the statistical evidence by the early 1950s was not considered dispositive. Drs. Wynder and Graham themselves published a relatively small study on this issue in 1950. So the 1953 mouse skin painting study was a landmark which demonstrated biological activity in the condensed tar of cigarette smoke in an *in vivo* experiment, which had never been done before.

Q. Was the 1953 Wynder and Graham mouse skin painting study well-publicized beyond its appearance in Cancer Research?

A. Yes, it was a landmark study that made its way into the popular press, and was covered, not only in scientific journals, but in popular magazines such as Time and Life.

Q. In their 1953 mouse skin painting study, did Wynder and Graham suggest that no more testing needed to be done in order to determine whether cigarette smoking caused disease in humans?

A. No, they did not.

Q. If you turn to the last page of the conclusion section of their study, the last conclusion of Drs. Wynder and Graham, do they suggest that more work needed to be done?

A. They articulated that additional testing in fact needed to be done, both to replicate the results of their study and also to do additional corroborative research.

Q. Why was it important to attempt to replicate the results of the 1953 mouse skin painting study?

A. Well, it is always important in science to be able to replicate the results of a laboratory experiment. It is an important step in the scientific method. This is how we check our work and insure that the results were accurate and reliable, and not caused by aberrant conditions in the laboratory. If an experiment can be replicated, then we have greater certainty that the results are accurate. We can also learn things about the experiment if the results differ from one experiment to the next.

Q. Dr. Dietz, following the Wynder and Graham 1953 mouse skin painting experiment, were there in fact scientists in the academic community who were attempting to replicate the Wynder and Graham findings?

A. Yes, I have seen references to those studies.

Q. And who was attempting to replicate the results of the Wynder and Graham results.

A. I have seen several. My understanding is that there was a group in Buffalo, New York and also a group at New York University. And also Dr. Wynder was attempting to replicate his work.

Q. Dr. Dietz, from your review of documents and other materials while at Liggett, are you familiar with what actions Liggett undertook in light of the reports of the Wynder and Graham mouse skin painting experiment in 1953?

A. Yes, Liggett took several actions beginning immediately after publication of the Wynder and Graham mouse skin painting study. The first was that Liggett increased its research budget. Liggett also commenced its own biological testing program. They retained an outside consulting firm by the name of Arthur D. Little, Inc. and began doing extensive biological testing on cigarette smoke. The first phase of Arthur D. Little's biological testing was to replicate the results of the 1953 Wynder and Graham mouse skin painting study.

Q. Can you describe for the Court what sort of company Arthur D. Little was?

A. Yes. Arthur D. Little was a very large and preeminent consulting firm which specialized in scientific consulting work for private industry and also for government agencies. They did scientific and biological consulting work for a variety of different industries. They also had expertise in the area of cancer research.

Q. Are you familiar generally with the type of researchers that were employed by Arthur D. Little?

A. Yes. They had scientists from a variety of disciplines, many of them from the major universities such as MIT, Harvard and so on.

Q. Dr. Dietz, who was the point person at Arthur D. Little who was in charge of the biological testing program for Liggett?

A. That was Dr. Charles Kensler.

Q. And are you familiar with Dr. Kensler's background?

A. Yes, I am.

Q. Can you tell the Court a little bit about Dr. Kensler's background?

A. Yes. He attended Columbia University and received a degree in chemistry. Then he attended Cornell University and received a master's degree and a doctorate degree in

pharmacology. He had academic relationships with Memorial Sloan-Kettering Cancer Center in New York and with Harvard University.

Q. Dr. Dietz, can you describe for the Court the biological testing program that Liggett and Arthur D. Little pursued soon after publication of the Wynder and Graham mouse painting study?

A. Yes. They had a number of objectives. The first was to see if they could replicate the Wynder and Graham mouse skin painting study in their own labs.

Q. Did Arthur D. Little actually undertake that work?

A. Yes, they did.

Q. And how long did that work take?

A. Well, that test takes about two years.

Q. And was this work done in secret?

A. No, it was not. In fact, Dr. Kensler had a professional relationship with Dr. Wynder and other members of the public health community and there is documentary evidence that Dr. Wynder and other scientists were kept apprised of this work and were invited to visit Liggett's labs where these experiments were taking place.

Q. And were they able to replicate the Wynder & Graham study?

A. Well, not exactly. In 1956, Liggett and A.D. Little concluded the two year mouse skin painting experiment which showed about half as many tumors as Wynder and Graham had shown in their experiment. So in a sense they did replicate it, but with less profound results.

Q. I would like to show you what has been identified as LGI 160. Is this a copy of the report of the results of the mouse skin painting study conducted by Liggett and Arthur D. Little, attempting to replicate the results of the Wynder and Graham study?

A. Yes.

Q. And did Arthur D. Little publish the results of their mouse painting study?

A. Yes. In 1959, Dr. Kensler presented a paper at the New York Academy of Sciences symposium which included the results of this mouse skin painting study, as well as other work done by Liggett and A.D. Little on the issue of smoking and health. That paper was published in a treatise called Tobacco & Health.

Q. I would like to show you what has been identified as LGI 270. Is this a copy of the chapter drafted by Dr. Charles Kensler that appeared in the treatise, Tobacco & Health, where the results of the Liggett/A.D. Little 1956 mouse skin painting study appeared, as well as other smoking and health research?

A. Yes.

Q. I would like to show you what has been marked as LGI 161, which are minutes from Liggett's Board of Directors, dated September 21, 1960.

A. Yes.

Q. Dr. Dietz, can I ask you to read the last full paragraph of this document?

A. "Mr. Blunt stated that Dr. Kensler, who on behalf of the Arthur D. Little organization in Cambridge, Massachusetts had been conducting the experiments on the biological effects of tobacco smoke, would address a conference on tobacco and health at the New York Academy of Medicine on September 26th at which he would describe some of the work done on behalf of this company. It was believed by our research people, Mr. Blunt said, that this address by Dr. Kensler, which would late doubtless be published in a scientific journal, would reflect credit upon the company and be an adequate and useful statement of some of the results of work upon which the company has spent approximately $4 million since 1953. It was the consensus of opinion that the appearance of this work in scientific world would be of general usefulness and of credit to this company."

Q. You said that the first objective of Liggett's biological testing program was to replicate the mouse skin painting test. What were the other objectives of the biological testing program?

A. Well, to the extent that Liggett could replicate Dr. Wynder's study, that meant that there was something in the cigarette smoke tar that was biologically active. So Liggett wanted to know, if that were the case, what was contributing to the biologically activity. So they were planning to isolate those components of the tar that may be active and test them.

Q. Is there a name for this process of trying to determine what parts of cigarette smoke are contributing to activity?

A. Yes. They did it by a process of fractionation.

Q. Can you explain to the Court what fractionation is?

A. Today we understand that there are thousands of separate chemicals that can be identified in cigarette smoke. Over time, the technology to identify all of these chemical constituents of smoke improved. Back in the 1950s, the constituents of cigarette smoke was less well understood and the technology to study cigarette smoke was less sophisticated. Where you have a very complex mixture of chemicals, as in cigarette smoke or cigarette tar, it is extremely difficult to identify specific chemicals. So the first thing you try to do is separate them into different groups of chemicals. In the 1950s, Liggett and A.D. Little utilized solvents to isolate certain chemicals in the cigarette tar and to leave others. By choosing the solvents they used to extract the tar, they were able to separate the tar into several different fractions which were much less complex and easier to study. So that was their approach.

Q. And did Liggett and A.D. Little do fractionation testing and isolate different constituents of smoke?

A. Yes they did.

Q. Were there any other purposes of the biological testing program?

A. Well, after isolating and testing the constituents of smoke, they hoped to identify what specifically was biologically active. The ultimate objective was to reduce or hopefully eliminate the biologically active components of cigarette smoke.

Q. Dr. Dietz, other than the mouse skin painting test, did Arthur D. Little conduct any other biological testing on behalf of Liggett in mid to late 1950s?

A. Yes, they did a number of studies.

Q. Can you give the Court some examples of those?

A. Yes. One of the first things they wanted to do was find a shorter method for measuring biological activity, so they worked on that. As I said earlier, the mouse skin painting study was only one method for testing biological activity and it was somewhat crude and took a long period of time (about two years) to complete. So A.D. Little pioneered shorter term tests to indicate, in most cases, biological activity in a matter of about four weeks. In addition to that, they did *in vivo* inhalation studies.

Q. Can you describe for the Court what an inhalation study is?

A. Well, they wanted to more closely simulate the smoking process in living mammals. So they did studies where they would expose different types of mammals to whole smoke. And so they did studies of that type on several different kinds of animals, including dogs, mice and chickens.

Q. Dr. Dietz, is it your understanding that Liggett and Arthur D. Little published all of the research results that they came up with in the 1950s and 1960s?

A. No, they didn't publish everything.

Q. To your knowledge, how was it determined by Arthur D. Little and Liggett which results would be published and which would not?

A. The standard for publication that was followed by Dr. Kensler was whether the research contributed something new to the academic and scientific community. If results were inconclusive or negative, Dr. Kensler believed that it was not always appropriate to publish those results.

Q. Dr. Dietz, to your knowledge did there come a time when Liggett and Arthur D. Little presented all of their research efforts from the biological testing program of the mid-1950s to early 1960s to public health authorities in the United States?

A. Yes. In 1963, Arthur D. Little and Liggett submitted to the Surgeon General's Advisory Committee a summary of all the work that they had done from 1954 when Arthur D. Little started working with Liggett until 1963.

Q. Dr. Dietz, what was the Surgeon General's Advisory Committee?

A. Well, that was a Committee appointed by the Surgeon General to study the smoking and health issue. They were compiling research on the issue of smoking and health for the 1964 Surgeon General's Report on Smoking and Health.

Q. Did Liggett and Arthur D. Little present an actual report of their biological testing program to the Surgeon General Advisory Committee?

A. Yes, they did.

Q. And how did that come about?

A. There was a written submission and oral presentation. Dr. Kensler knew a number of people on the Surgeon General's Advisory Committee. And Dr. Kensler volunteered to members of the Advisory Committee, on behalf of Liggett and A.D. Little, that he would present a summary to the Advisory Committee of all of the research conducted by Liggett and A.D. Little on the issue of smoking and health. And the Advisory Committee accepted his offer. So

Dr. Kensler, Liggett and Arthur D. Little prepared and submitted a very comprehensive report to the Surgeon General's Advisory Committee which reflected that research.

Q. Have you ever seen a copy of the report that Arthur D. Little and Liggett submitted to the Surgeon General's Advisory Committee in 1963?

A. Yes, I have seen copies of that.

Q. Have you reviewed it?

A. Yes, I have.

Q. What is the nature of the report that Liggett and Arthur D. Little presented to the Surgeon General's Advisory Committee?

A. Well, it's very comprehensive. It includes a summary of all the work that they did over that period of time, which was very large. There were nine volumes, each volume describing a particular area of work that they had been involved with. And also it included a total of over 900 pages.

Q. Dr. Dietz, I would like to show you what is identified as LGI 154 and U.S. 59,738 Can you tell the Court whether this document is a copy of the nine volume report submitted by Liggett and Arthur D. Little to the Surgeon General's Advisory Committee?

A. Yes, this is a copy.

Q. Dr. Dietz, I want to show you page (i) from volume III, section B of this nine-volume report. Dr. Dietz, can you tell the Court what this page from the report is?

A. Yes, this is a table of contents from one of the volumes that was submitted. And this volume is related to the biological portion and chemical composition of tobacco smoke.

Q. Dr. Dietz, please focus on section A of the table of contents on page (i). Dr. Dietz, this says "materials which have been suggested as possible carcinogens for the human lung." Dr. Dietz, in the report that Liggett and Arthur D. Little made to the Surgeon

General's Advisory Committee, did Liggett and Arthur D. Little suggest to the committee that there are possible human carcinogens in cigarette smoke?

A. Yes, they did. This was one example where a number of components of cigarette smoke were identified as carcinogenic in the human lung.

Q. And can I focus on section B of page (i)? Doctor, what are carcinogenic polycyclic aromatic compounds?

A. Well, those are a class of organic compounds that are formed during the combustion process. They are formed in all kinds of combustion. It is next to impossible not to have them form when you have combustion. A good example is a barbecue grill. You do get a lot of the polycyclic aromatic hydrocarbons formed during the grilling process, mainly due to the combustion process. Other ways to get them is in automobile exhaust. Any kind of burning, such as a forest fire, will produce polycyclic aromatic hydrocarbons. And, of course, they are also present in cigarette smoke, because that's a combustion process.

Q. And, Dr. Dietz, did Liggett indicate to the Surgeon General's Advisory Committee in this report that cigarette smoke contained carcinogenic polycyclic aromatic hydrocarbons?

A. Yes, they did. And they also found different types of polycyclic aromatic hydrocarbons which they identified for the Surgeon General. One type was what they called unsubstituted, and the other was substituted. And they indicated that the substituted polycyclic aromatic hydrocarbons may be more dangerous than all the other kinds. They also indicated that there were heterocyclic nitrogen compounds, which had been suspected of being carcinogenic.

Q. Dr. Dietz, do you know who James Hundley was?

A. Yes, he was one of the Assistant Surgeon Generals associated with the smoking and health issue.

Q. Dr. Dietz, have you ever seen any correspondence from James Hundley to Dr. Kensler?

A. Yes, I have seen that.

Q. Let me show you what is identified as LGI 288. Have you seen this letter before?

A. Yes, I have.

Q. Can you read the paragraph that is the body of the letter?

A. Yes. The letter reads: "We feel that simple acknowledgment of the receipt of the nine volumes which you submitted to us is not sufficient. Please accept on behalf of Liggett and Myers Tobacco Company and Arthur D. Little, Incorporated our special gratitude for the tremendous time, efforts, and expense for the production of material for our use. We're equally grateful for the most excellent oral presentation made by you and Dr. Raymond Hainer on May 3rd."

Q. Dr. Dietz, have you ever seen the 1964 Surgeon General's Report?

A. Yes, I have.

Q. Did the Advisory Committee of the Surgeon General favorably acknowledge A.D. Little, Inc., Dr. Charles Kensler and the Liggett & Myers Tobacco Company in the acknowledgements portion of the 1964 Surgeon General Report?

A. Yes it did.

Q. Dr. Dietz, I want to show you a document that that came into evidence during plaintiffs' case, U.S. 20345. Have you seen this document before?

A. Yes, I have seen the document.

Q. The document is entitled: "L&M, A Perspective Review" and it is dated from May 1961. During the course of your review of documents and research files at Liggett, have you ever seen this document in the files of Liggett?

A. No, I have not seen it in Liggett's files.

Q. On what occasion would you have seen this document?

A. I believe I may have been shown this document at a deposition.

Q. Dr. Dietz, can you focus on the first paragraph of the document; the first paragraph of the document reads: "There are biologically active materials present in cigarette tobacco. These are A, cancer causing; B, cancer promoting; C, poisonous; D, stimulating, pleasurable, and flavorful." Dr. Dietz, in the 1963 report that Liggett and Arthur D. Little made to the Surgeon General, did Liggett and Arthur D. Little indicate that there were cancer-causing constituents in cigarette smoke?

A. Yes, they did.

Q. Are there any facts in this May 1961 document that were not communicated to the Surgeon General's Advisory Committee in Liggett's nine-volume report?

A. No, there was not.

Q. Dr. Dietz, I want to change subject matters. Are you familiar with the term "General Reduction" in the context of cigarette smoke?

A. Yes I am.

Q. In the context of cigarette tar and nicotine yields, what does General Reduction refer to?

A. It refers to efforts in the design of cigarette products to reduce the tar and nicotine yields generally, that is, across the board. For example, the use of reconstituted tobacco; the various blends of the tobacco; the use of puffed and expanded tobacco; the introduction of filters and ventilation holes; and many other design features would bring tar and nicotine yields of cigarettes down on average.

Q. The Court has already heard evidence that the average weighted tar and nicotine yields of commercially sold cigarettes in the United States dropped over time beginning in the 1950s. My question to you is whether Liggett utilized General Reduction techniques beginning in the 1950s and thereafter to reduce on average the tar and nicotine yields in its commercially sold cigarettes.

A. Yes, Liggett did.

Q. Dr. Dietz, to your knowledge, did Liggett coordinate with the other major tobacco companies in the 1950s and early 1960s in connection with its biological testing program?

A. Liggett initiated and conducted its own biological testing program. Beginning in 1954, the other major companies formed the Tobacco Industry Research Committee (also known as the TIRC). This was the predecessor of what was later called the Council for Tobacco Research (or the CTR). Liggett decided not to join TIRC when it was created in 1954, and stayed out of that organization. Although Liggett was a member of the CTR for approximately four years, from 1964-1968, Liggett for the most part conducted its own biological testing and smoking and health research.

Q. I would like to show you a document that has been identified as LGI 142. Does this document help inform your understanding of Liggett's independence in the 1950s in the area of smoking and health research?

A. Yes, it is clear that Liggett believed that they were taking a "path independent" from the other tobacco companies in the context of smoking and health research. That is, in part, why they decided not to coordinate their efforts with the other major tobacco companies and why they stayed out of the TIRC.

Q. Dr. Dietz, I would like to switch topic areas again. Are you familiar with a project at Liggett called TE-5001?

A. Yes, I remember seeing research documents while at Liggett concerning that Project.

Q. Dr. Dietz, I'd like to show you several documents which have been identified as U.S. Exh, Nos. 21,186; 21,187; 21,428; 21,596; and 36,263; these are all documents that were moved into evidence (in connection with plaintiff's designations of the prior deposition testimony of Dennis Dietz) earlier in this action. Dr. Dietz, have you seen these documents before?

A. Yes I have.

Q. What was Project TE-5001?

A. My understanding is that Project TE-5001 was experimental research conducted at Liggett in the 1970s concerning the pH level of cigarette smoke. Efforts were made to understand what would happen to nicotine in cigarette smoke if the pH level of the cigarette were altered.

Q. How could one alter the pH level of the cigarette?

A. Well, there are a variety of ways. I think these experiments were exploring the use of certain additives to vary the ratio of bound and unbound nicotine in the cigarette smoke of certain experimental cigarettes.

Q. As far as you know, did Liggett ever utilize the technology from TE-5001 on a commercially sold cigarette?

A. To my knowledge, Project TE-5001 was experimental and Liggett did not utilize the technology on any commercially sold cigarettes.

Q. As far as you know, did Liggett ever add ingredients or additives to its commercially sold cigarettes to purposefully alter the nicotine yield?

A. No, Liggett did not introduce additives to the cigarette to increase or decrease nicotine yields. In fact, Liggett did not utilize any design features in its cigarettes to fix or alter the nicotine yields of its cigarettes.

Q. How then would Liggett achieve lower levels of nicotine in some of its commercially sold cigarettes than in others?

A. Liggett did not design its cigarettes to have a specific target nicotine yield, or to have certain measurable levels of nicotine. When designing different cigarette products, Liggett would design its cigarettes to achieve target levels of tar. So full flavored cigarette products would have higher tar yields than light or ultralight products. It was generally understood that there is a relationship between the level of tar and the level of nicotine in any given cigarette, so reductions in tar usually meant reductions in nicotine. But Liggett would not design its cigarettes to target a certain nicotine yield. Simply put, the measured nicotine yield of a commercially sold Liggett cigarette would fall wherever it fell. It was not the function of intention or of Liggett's cigarette design.

Q. Thank you Dr. Dietz. I have no further questions.